

Tracking Economic Instruments and Finance for Biodiversity

2021



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The 2030 Agenda for Sustainable Development committed the international community to protect both life below water and life on land. The post-2020 Global Biodiversity Framework under the Convention on Biological Diversity (CBD) requires renewed, immediate and ambitious action to conserve and sustainably use biodiversity and ecosystem services.

Economic instruments, such as taxes, fees and charges, tradable permits, and environmentally-motivated subsidies, provide incentives to both producers and consumers to behave in a more environmentally sustainable way. These instruments also provide continuous incentives to achieve objectives more cost-effectively, and most can mobilise finance or generate revenue. They are key tools to mainstream biodiversity across sectors. Economic instruments are the so-called “positive incentives” embedded in the post-2020 Global Biodiversity Framework, notably Target 18, and previously reflected in CBD Aichi Target 3.

The OECD Environmental Policy Committee, through its unique database of Policy Instruments for the Environment (PINE), collects quantitative and qualitative information on policy instruments from more than 120 countries worldwide. This brochure presents statistics on the biodiversity-relevant economic instruments and the finance they mobilise, based on currently available data in PINE. This 2021 update of the brochure also includes information on payments for ecosystem services (PES) and on biodiversity offsets, two other types of economic instruments that provide incentives for biodiversity conservation and its sustainable use. The data on PES and on biodiversity offsets were collected via a questionnaire conducted in 2020-21.

The data can be used to monitor progress towards proposed Target 18 of the post-2020 Global Biodiversity Framework (on incentives) and Target 19 (on resource mobilisation), and are used to monitor progress towards Sustainable Development Goal (SDG) Target 15.a. on biodiversity finance.

Key highlights - 2021

- The number of biodiversity-relevant taxes has increased since 1980, though there has been a plateau since 2010. A total of 234 biodiversity-relevant taxes are currently reported to the OECD PINE database, spanning 62 countries. In OECD countries, these biodiversity-relevant taxes generate USD 7.7 billion a year in revenue (2017-2019 average). Across all countries reporting, the total revenue generated by biodiversity-relevant taxes is USD 8.9 billion a year.
- The number of biodiversity-relevant fees and charges has also been increasing, though marginally since about 2010, with 194 fees and charges currently in force in 50 countries. Information on the revenue collected from these fees and charges is not yet consistently reported to the PINE database.
- The number of biodiversity-relevant tradable permits schemes has remained relatively constant since 2010, with 39 tradable permits currently active in 26 countries. At least 4 of these tradable permit schemes also allow for the auctioning of a portion or all of the permits.
- The number of environmentally-motivated subsidies relevant for biodiversity currently in force, as reported to the PINE database, is 163, in place in 28 countries.
- While the OECD PINE database does not currently collect information on payments for ecosystem services (PES), an OECD questionnaire on PES, conducted in late 2020, identified 153 PES programmes in 37 countries. PES mobilised USD 10.1 billion per year in 10 countries alone (2017-2019 average).
- While some progress has been made, substantial potential remains to scale up the use and ambition of biodiversity-relevant economic instruments. For example, the revenue generated from biodiversity-relevant taxes amounted to 0.92% of the total revenue from environmentally-relevant taxes in OECD countries (2017-2019 average).

Note: The statistics in this document are based on data reported to the OECD PINE database as of 28 July 2021. See the section on "Methodology and how to contribute" for appropriate caveats.

The OECD Policy Instruments for the Environment (PINE) database

The OECD PINE database contains more than 4 100 instruments, of which about 3 680 are currently in force, from across more than 120 countries. The policy instruments covered include:

- taxes
- fees and charges
- tradable permits
- environmentally-motivated subsidies

For each policy instrument, the following information is collected:

- when it was introduced
- what it applies to
- the geographical coverage
- the environmental domains it aims to address (e.g. biodiversity, climate change, air pollution)
- the industries concerned
- revenues, costs or rates
- whether the revenue is earmarked
- exemptions

Environmental domains represent the focal issues (environmental externalities) covered by a certain policy instrument. Instruments can have both a direct and an indirect effect on several environmental domains; however, only the domain to which the instrument has a direct effect is indicated in the database. Multiple domains can be indicated for a single instrument. For example, a tax on groundwater extraction will have natural resources and biodiversity as its domains.

In reality, every domain could be related indirectly; hence, the classification by domain is most valuable if only used in a direct narrow sense. For instance, a tax on motor vehicle fuel will have a direct effect on climate change, transport, energy efficiency and air pollution. Through its effect on climate change, it may also have an indirect effect on biodiversity. In this case, biodiversity is not indicated as a domain.

The data on biodiversity-relevant economic instruments have been used to monitor progress towards Aichi Target 3 on positive incentives under the CBD 2011-2020 Strategic Plan for Biodiversity, and are being used to monitor progress towards Sustainable Development Goals 15.a.1, on biodiversity finance. Positive incentives also feature in the post-2020 Global Biodiversity Framework, under Target 18. The data provided can therefore also serve to monitor progress towards this new post-2020 target.



Aichi Biodiversity Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimise or avoid negative

impacts, and **positive incentives for the conservation and sustainable use of biodiversity are developed and applied**, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.



Aichi Biodiversity Target 20: By 2020, at the latest, the mobilisation of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the

consolidated and agreed process in the Strategy for Resource Mobilisation, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties. According to CBD/COP/DEC/XIII/28, the generic indicator for this target is: Trends in the mobilisation of financial resources.



Sustainable Development Goal 15.A: Mobilise and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.

The indicators for this target are: 15.a.1 (a) official development assistance on conservation and sustainable use of biodiversity; and (b) revenue generated and finance mobilized from biodiversity-relevant economic instruments.

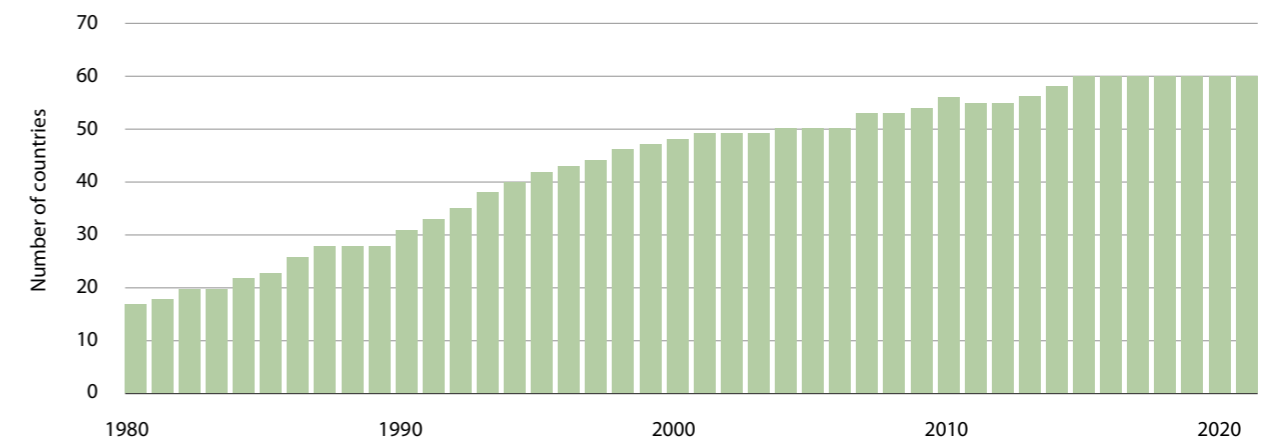
Biodiversity-relevant taxes

Biodiversity-relevant taxes include taxes on pesticides, fertilisers, forest products and timber harvests. Based on the polluter pays principle, these instruments place an additional cost on the use of the natural resource or the emission of a pollutant, to reflect the negative environmental externalities that they generate. As such, they provide incentives for both producers and consumers to behave in a more environmentally-sustainable way.

According to data reported to the OECD PINE database, currently 62 countries have biodiversity-relevant taxes in place. While the number of countries with biodiversity-relevant taxes has increased substantially from 1980, there

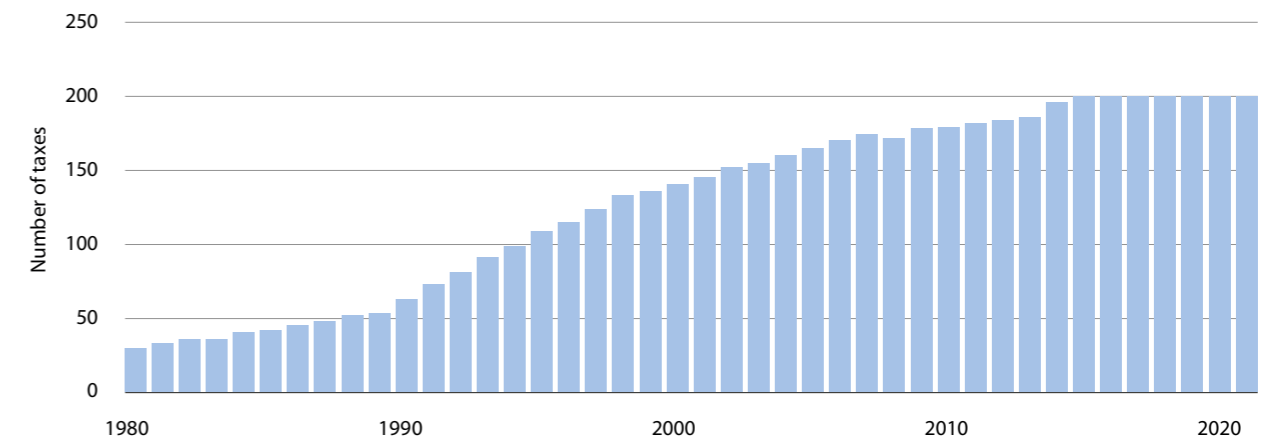
has been a relative plateau since 2010 (Figure 1). Across these countries, 234 biodiversity-relevant taxes are in place (Figure 2). The number of biodiversity-relevant taxes by country is depicted in Figure 3.

Figure 1. NUMBER OF COUNTRIES WITH BIODIVERSITY-RELEVANT TAXES



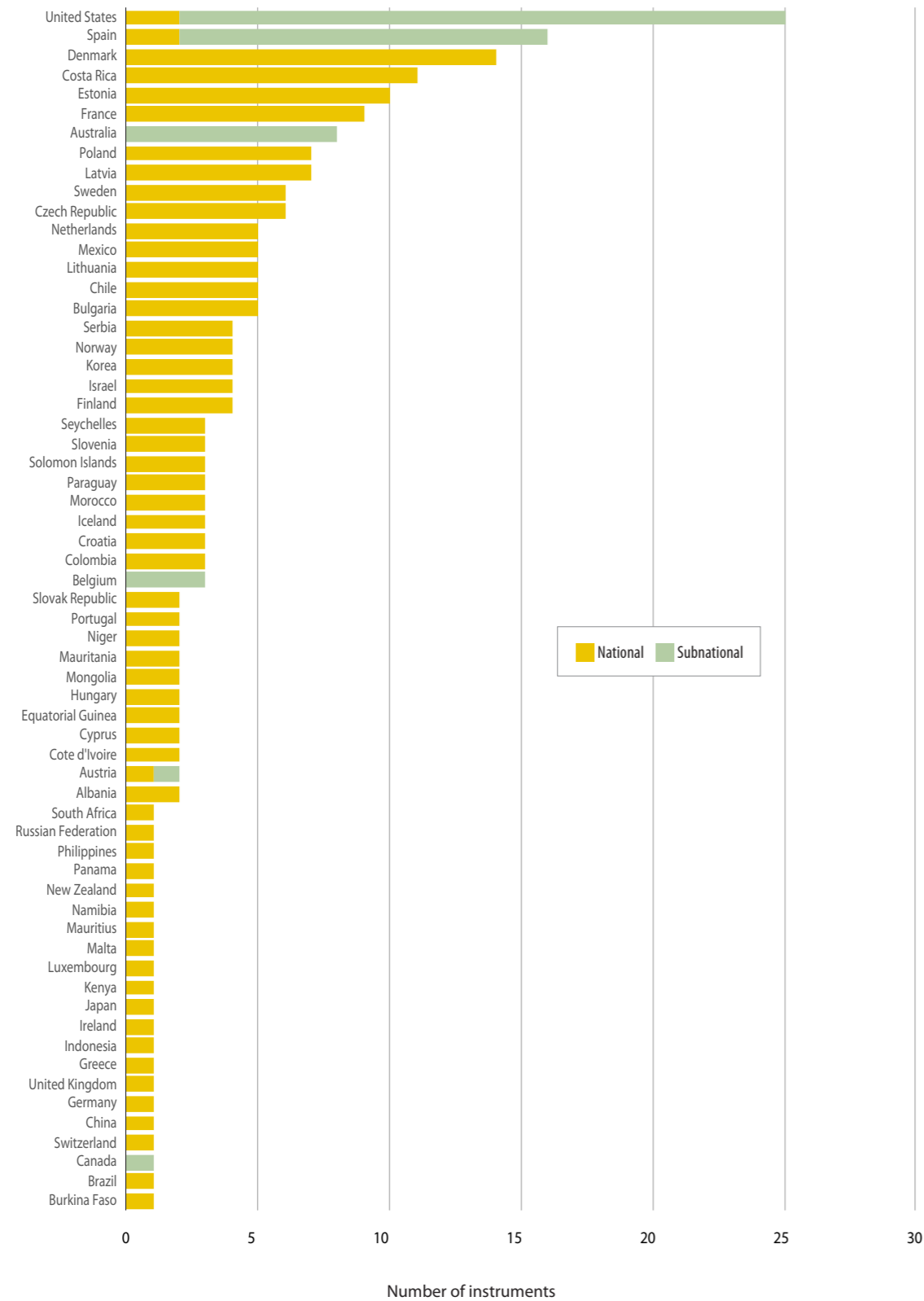
Note: Two additional countries have biodiversity-relevant taxes, but they are not included in this figure as starting dates are not available
Source: OECD PINE database, accessed 28 July 2021.

Figure 2. NUMBER OF BIODIVERSITY-RELEVANT TAXES



Note: 33 biodiversity-relevant taxes are not included in this figure as starting dates are not available
Source: OECD PINE database, accessed 28 July 2021.

Figure 3. **NUMBER OF BIODIVERSITY-RELEVANT TAXES BY COUNTRY (2021)**



Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".
 Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.
 Source: OECD PINE database, accessed 28 July 2021.

Revenue generated from biodiversity-relevant taxes
 Biodiversity-relevant taxes generate USD 7.7 billion a year in revenue across OECD countries (2017-2019 average). While this is a substantial amount, it only constitutes 0.92% of all environmentally-related tax revenue, which in turn account for about 5% of all tax revenue. The total revenue generated by biodiversity-relevant taxes across all countries

(including OECD) amounts to USD 8.9 billion per year (2017-2019 average). This constitutes 0.95% of all environmentally-related tax revenue from all countries. In some cases, the revenue from these biodiversity-relevant taxes is earmarked for biodiversity conservation and sustainable use. Irrespective of whether this is the case however, such taxes serve to provide incentives for more sustainable production and consumption.



Biodiversity-relevant fees and charges

Biodiversity-relevant fees and charges include entrance fees to national parks, fees on hunting licenses, charges on land-based sewage discharge (such as for the Great Barrier Reef area in Australia), charges for groundwater abstraction and biodiversity-relevant non-compliance fines.

Currently, 50 countries have biodiversity-relevant fees and charges in place (Figure 4). The number of these types of instruments in place is 194 (Figure 5). Figure 6 shows the number of fees and charges by country. Information on the revenue collected from these fees and charges is not yet consistently reported to the PINE database.

What is the difference between a tax and a fee or charge?

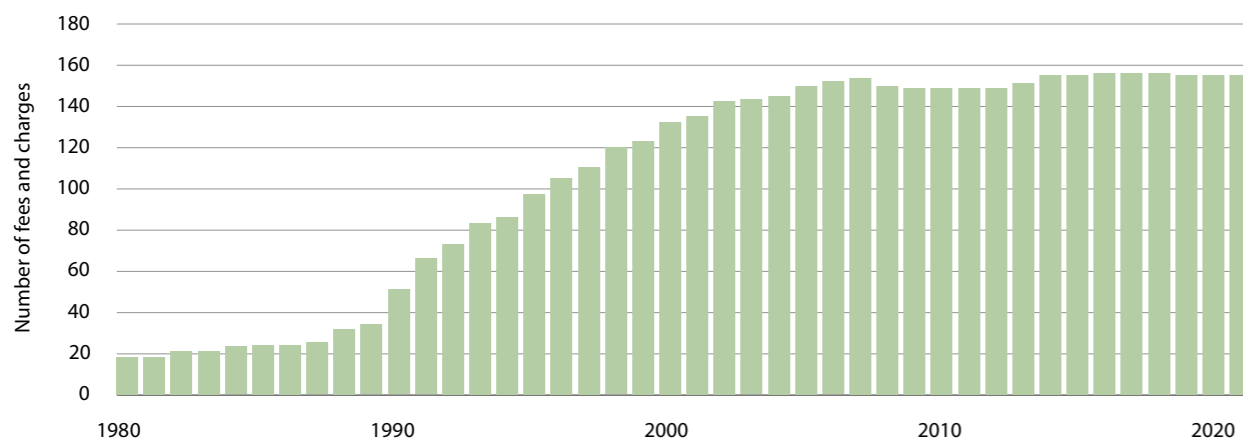
A charge is a required payment to general government, meaning that the payer of the charge gets something in return, more or less in proportion to the payment made, whereas a tax is a compulsory unrequited payment. For example, a wastewater payment that varies according to the volume of water consumed would constitute a fee (sometimes called a charge), while a wastewater payment that varies according to the amount of pollution generated would be classified as a tax. In the OECD PINE database, the terms “fees” and “charges” are used interchangeably.

Figure 4. NUMBER OF COUNTRIES WITH BIODIVERSITY-RELEVANT FEES AND CHARGES



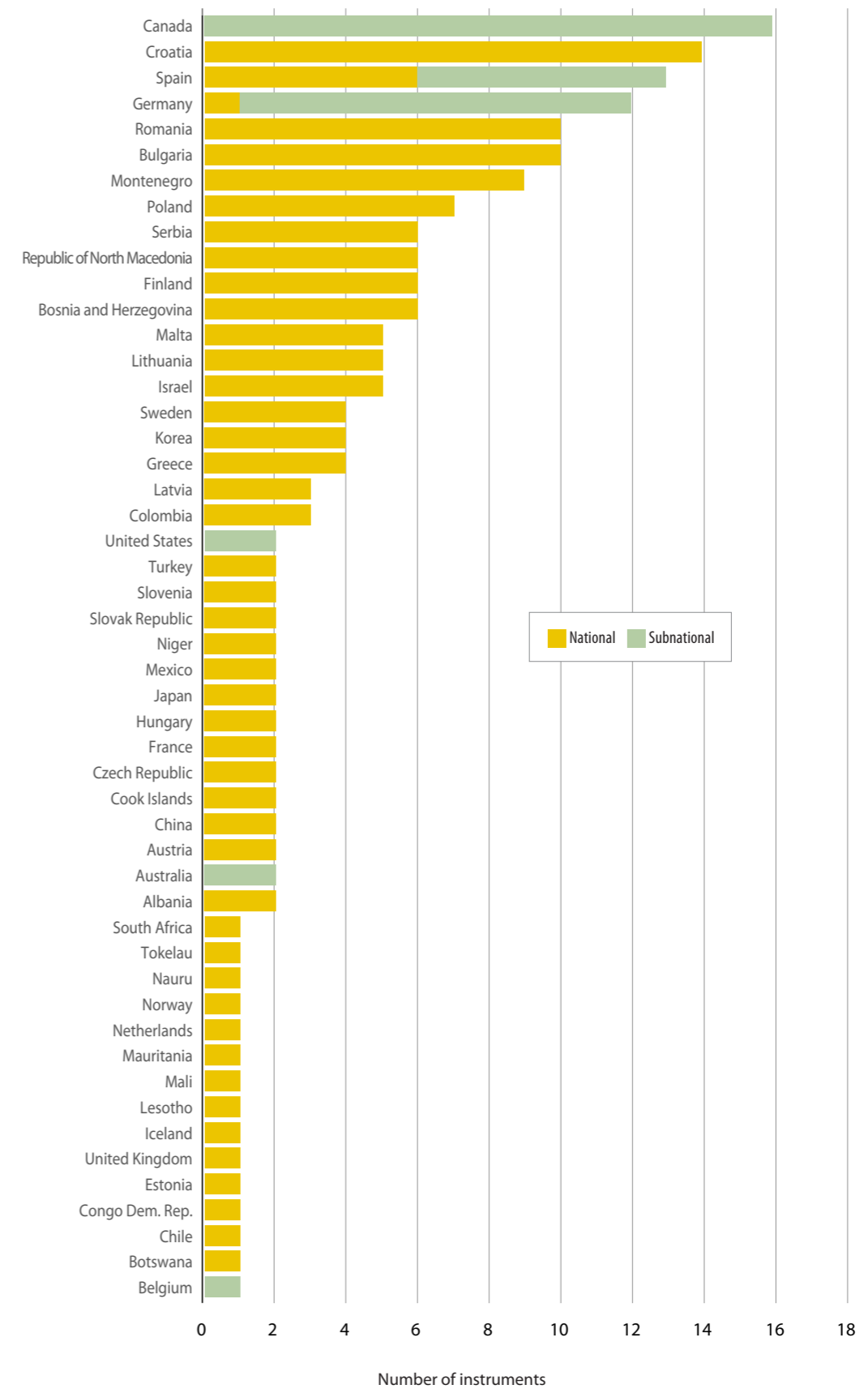
Note: 4 additional countries have biodiversity-relevant fees and charges, but they are not included in this figure as starting dates are unavailable
Source: OECD PINE database, accessed 28 July 2021.

Figure 5. NUMBER OF BIODIVERSITY-RELEVANT FEES AND CHARGES



Note: 38 fees and charges are not included in this figure as starting dates are not available
Source: OECD PINE database, accessed 28 July 2021.

Figure 6. NUMBER OF BIODIVERSITY-RELEVANT FEES AND CHARGES BY COUNTRY (2021)



Source: OECD PINE database, accessed 28 July 2021

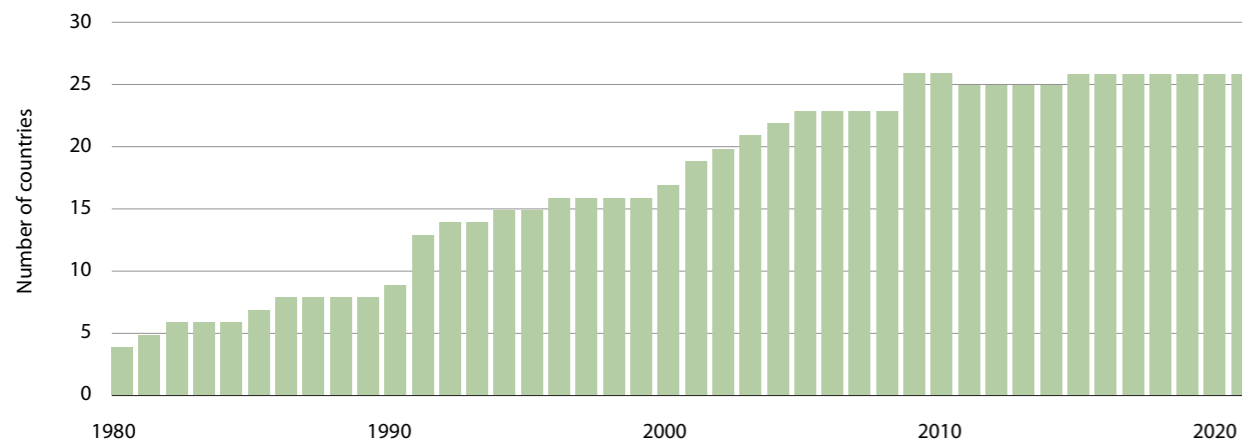
Biodiversity-relevant tradable permits

Biodiversity-relevant tradable permits include individual transferable quotas (ITQs) for fisheries, tradable development rights, and tradable hunting rights. These policy instruments (also referred to as cap-and-trade programmes) set a limit on the total amount of a natural resource that can be exploited, and then allocate individual permits to users that they can also trade. The allocation of these permits can be grandfathered (i.e. allocated to existing users of the resource free of charge, typically in perpetuity) or auctioned. If they are auctioned, tradable permits can also mobilise finance.

Currently, 26 countries have biodiversity-relevant tradable permits in place, with a total of 39 schemes (Figures 7 and 8). At least four of these schemes allocate permits via auctioning. These include the bighorn sheep hunting auctions in Alberta, Canada, and similar auctions in Baja California, Mexico. Auctioning of hunting permits is also common in the United States. In Chile, amendments to the Fisheries Law in 2013 indicate that for fisheries determined to be fully-exploited, such

as jack mackerel, up to 15% of the annual total allowable catch is auctioned off. Quotas for horse mackerel were auctioned for the first time in December 2017. Revenue from these auctions can also be earmarked for biodiversity purposes. In Alberta, for example, a minimum of 60% of funds generated by the hunting auction have been contractually designated to be invested in projects for the long-term benefit of Rocky Mountain bighorn sheep.

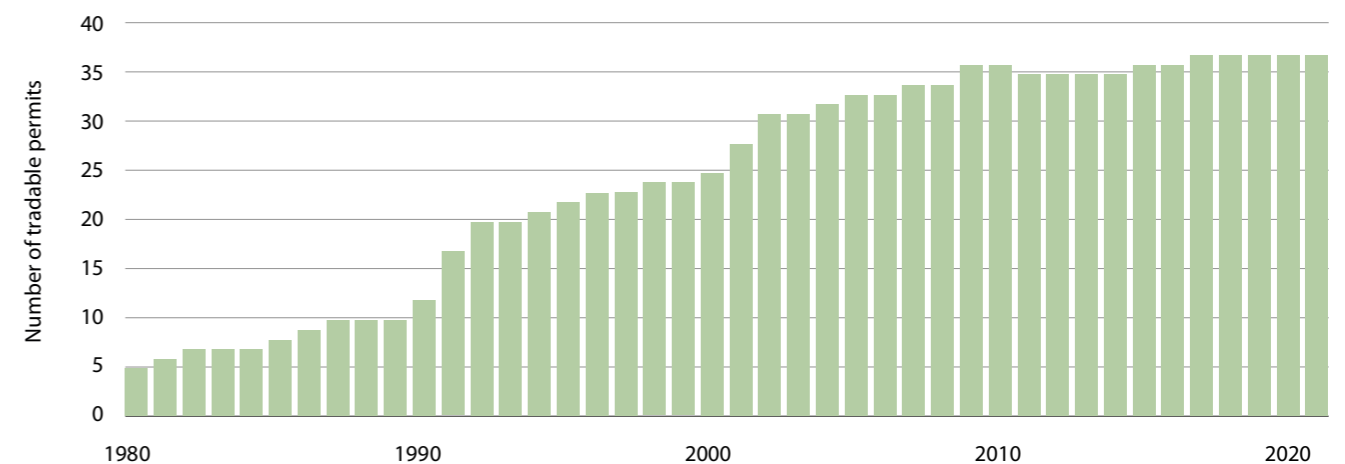
Figure 7. NUMBER OF COUNTRIES WITH BIODIVERSITY-RELEVANT TRADABLE PERMITS



Source: OECD PINE database, accessed 28 July 2021.



Figure 8. NUMBER OF BIODIVERSITY-RELEVANT TRADABLE PERMITS



Note: Two tradable permits are not included in this figure as starting dates are not available
Source: OECD PINE database, accessed 28 July 2021.

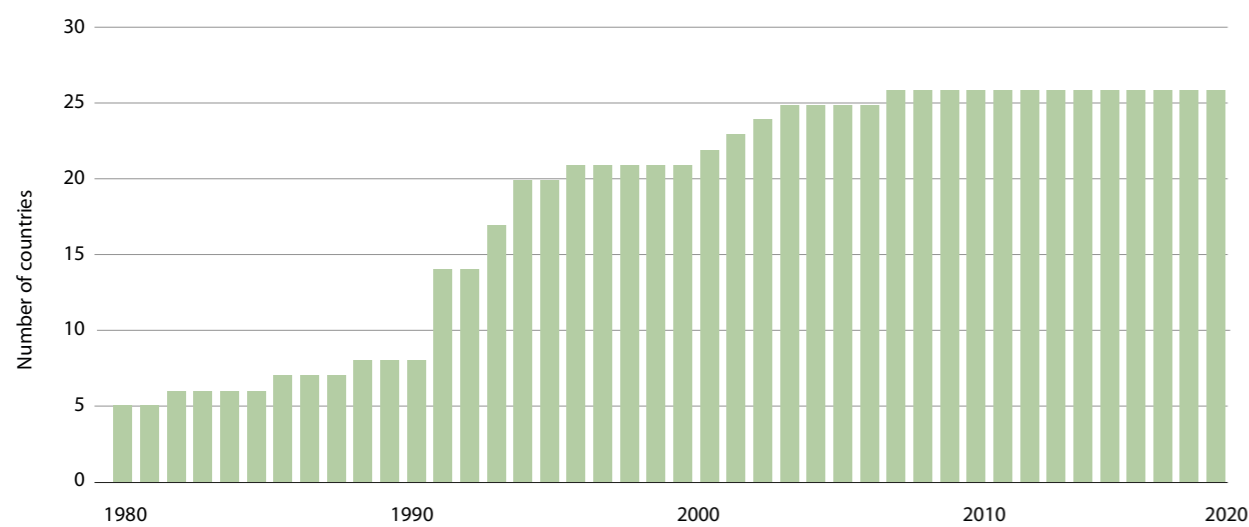


Biodiversity-relevant subsidies

Biodiversity-relevant subsidies include those environmentally-motivated subsidies that target, for example, forest management and reforestation, organic or environmentally-friendly agriculture, pesticide-free cultivation, and land conservation.

There are currently 163 environmentally-motivated subsidies relevant for biodiversity in place, across 28 countries, as reported in the PINE database (Figures 9 and 10).

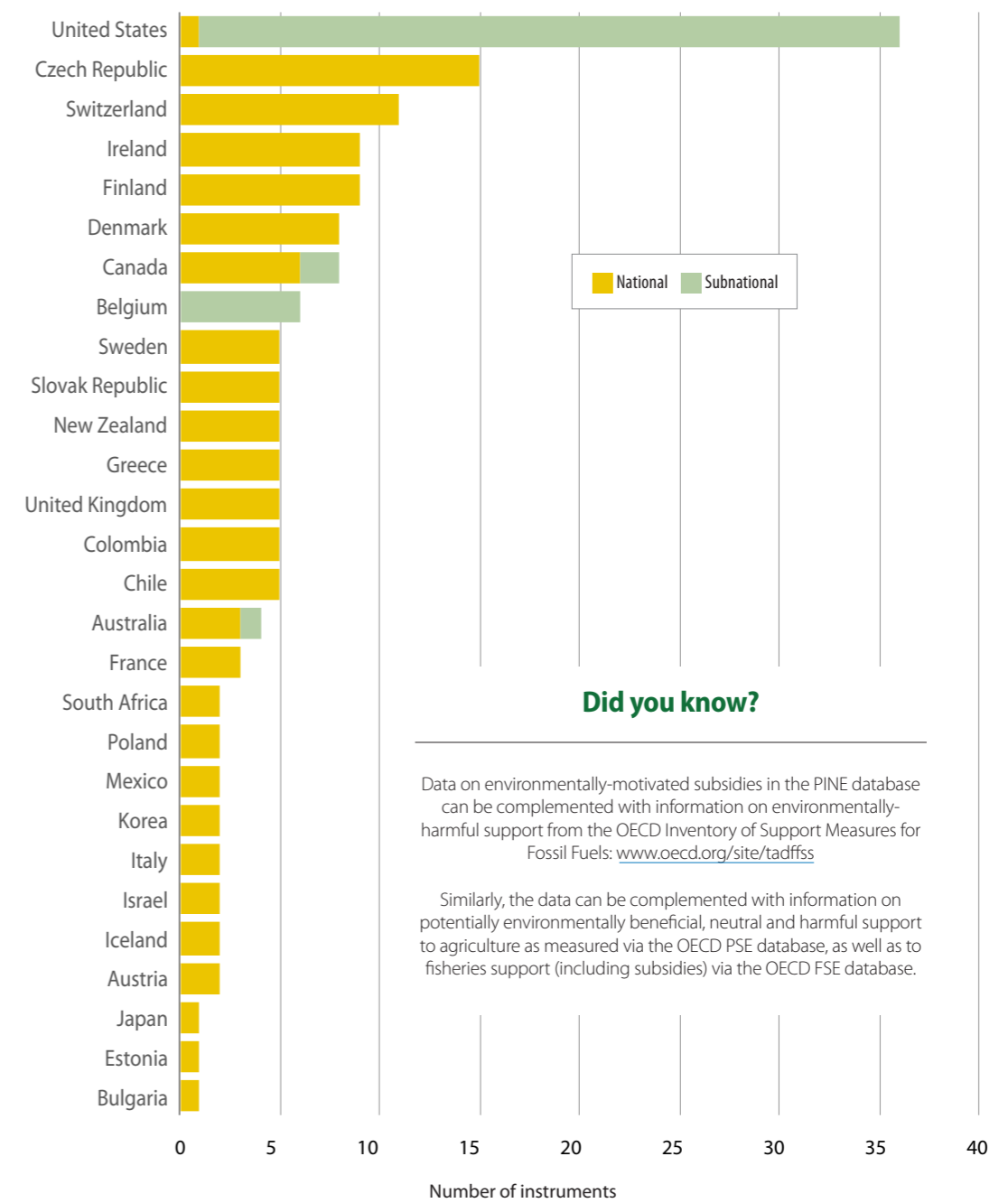
Figure 9. NUMBER OF COUNTRIES WITH BIODIVERSITY-RELEVANT ENVIRONMENTALLY-MOTIVATED SUBSIDIES



Note: Two additional countries have environmentally-motivated subsidies relevant to biodiversity, but these are not included in the figure as start dates are unavailable
Source: OECD PINE database, accessed 28 July 2021



Figure 10. NUMBER OF BIODIVERSITY-RELEVANT ENVIRONMENTALLY-MOTIVATED SUBSIDIES (2021)



Did you know?

Data on environmentally-motivated subsidies in the PINE database can be complemented with information on environmentally-harmful support from the OECD Inventory of Support Measures for Fossil Fuels: www.oecd.org/site/tadffs

Similarly, the data can be complemented with information on potentially environmentally beneficial, neutral and harmful support to agriculture as measured via the OECD PSE database, as well as to fisheries support (including subsidies) via the OECD FSE database.

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Source: OECD PINE database, accessed 28 July 2021.

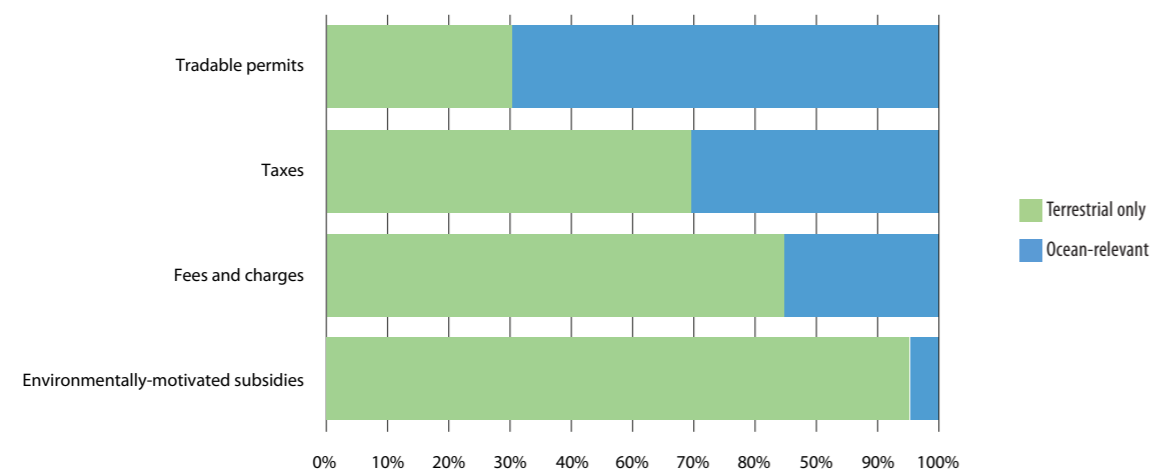


A closer look at terrestrial and ocean biodiversity-relevant economic instruments

The OECD PINE database allows governments to indicate whether their biodiversity-relevant economic instruments are relevant to the conservation and sustainable use of terrestrial biodiversity, ocean biodiversity, or both.

According to the data reported to the PINE database, most biodiversity-relevant taxes, fees and charges, and environmentally-motivated subsidies address only terrestrial biodiversity issues. In contrast, most tradable permit schemes are ocean-relevant (notably due to the number of individually transferable quota systems that are in place to manage fisheries) (Figure 11).

Figure 11. **TERRESTRIAL-ONLY VS. OCEAN-RELEVANT BIODIVERSITY INSTRUMENTS (2021)**



Note: Some ocean-relevant biodiversity instruments are also relevant for terrestrial biodiversity
Source: OECD PINE database, accessed 28 July 2021

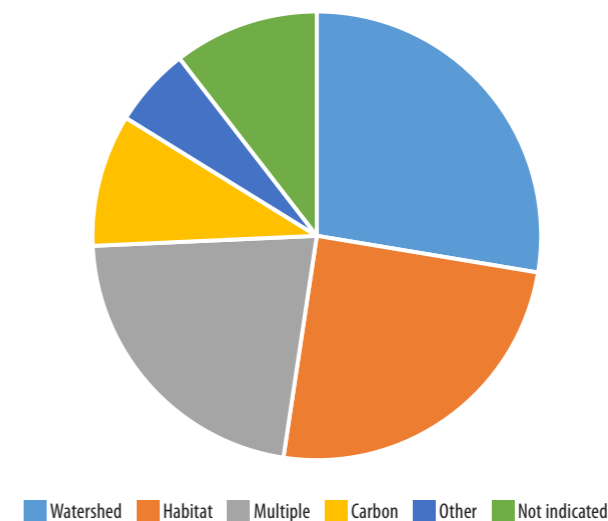


Payments for ecosystem services

Payments for ecosystem services (PES) can be defined as: (1) voluntary transactions (2) between service users (3) and service providers (4) that are conditional on agreed rules of natural resource management (5) for generating offsite services (Wunder, 2015). PES are based on the user- or beneficiary-pays approach.

Responses to an OECD questionnaire provided information on around 150 PES programmes in place in 36 countries. The questionnaire responses include information on the type of ecosystem service targeted by the PES programmes and – though incomplete – the finance mobilised by the PES programmes. Based on the questionnaire responses, most PES target watershed services, followed by habitat, and then multiple ecosystem services (Figure 12).

Figure 12. **PES SCHEMES BY OBJECTIVE (TYPE OF ECOSYSTEM SERVICE TARGETED)**



Source: OECD Questionnaire on Payments for Ecosystem Services 2020

Across the ten countries that provided recent information on the amount of finance mobilised by PES, PES channelled USD 10.1 billion per year (2017-2019 average). The ten countries are Argentina, China, Costa Rica, Germany, Japan, Norway, Romania, Switzerland, United Kingdom, and the United States. While not directly comparable, this is in line with earlier OECD desk research on finance mobilised by 10 large PES programmes (see OECD, 2020a).



Biodiversity offsets

Biodiversity offsets are conservation actions intended to compensate for residual, unavoidable impacts of development projects, after prevention and mitigation measures have taken place. Biodiversity offsets are based on the polluter pays principle.

At least 37 countries have laws requiring biodiversity offsets as a prerequisite for certain developments. Close to 13 000 offset projects have been identified across these countries (Bull and Strange, 2018). Finance mobilised by biodiversity offsets has been estimated at USD 6-9 billion per year (Deutz et al. 2020). OECD's questionnaire found that one scheme alone in the U.S. (NRCS Wetland Mitigation Banking) channeled USD 3.3 million per year towards the restoration, creation or enhancement of wetlands from 2017-2019.



An overview of biodiversity-relevant economic instruments and the finance they generate

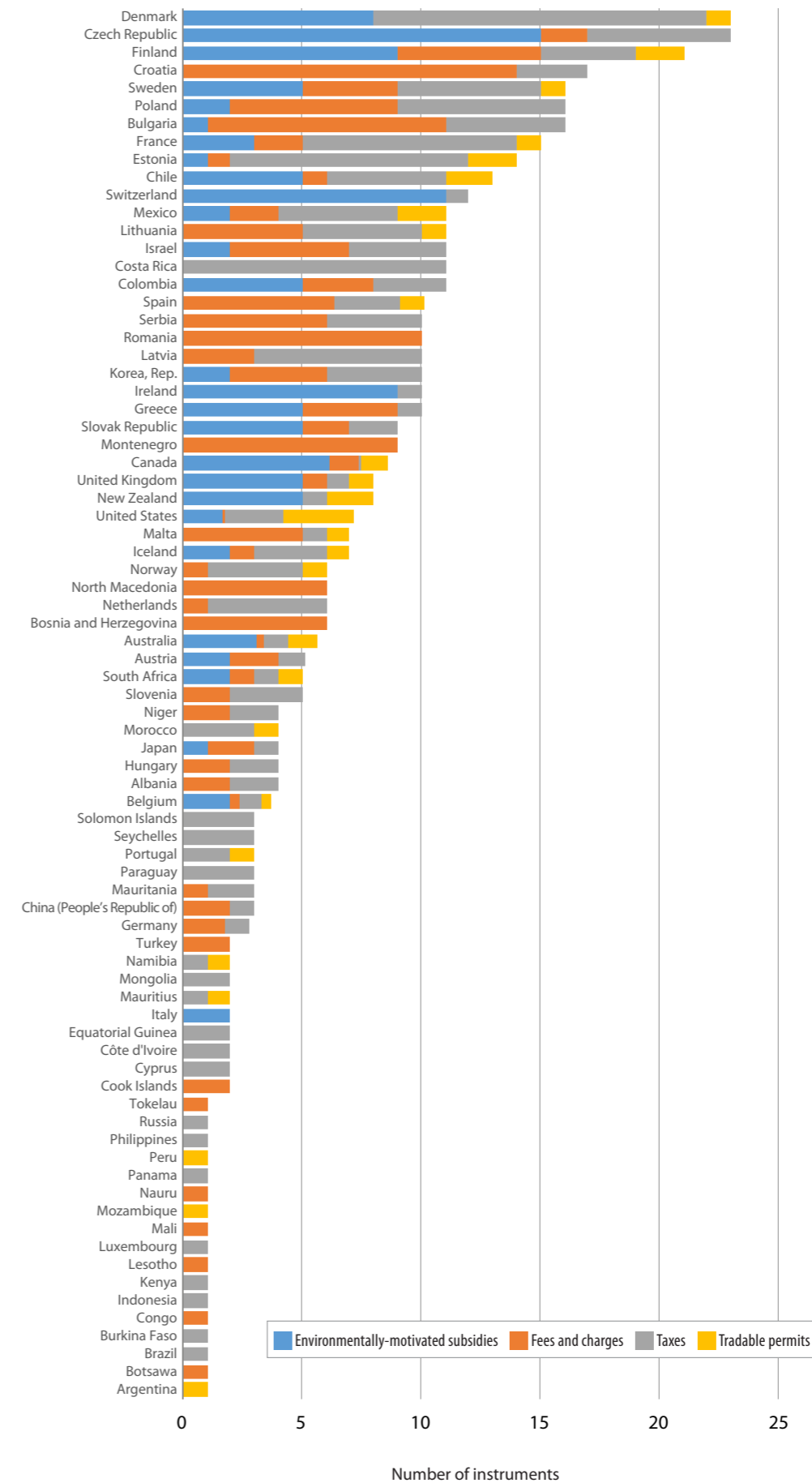
An overview of the PINE data on biodiversity-relevant economic instruments by country is provided in Figure 13.

ESTIMATED FINANCE GENERATED ACROSS SEVERAL BIODIVERSITY-RELEVANT MECHANISMS

Total global finance for biodiversity protection has been estimated at USD 78-91 billion per year (2015-2017 average) (OECD, 2020b). This covers public and private, domestic and international finance. Table 1 below summarises the revenue generated or finance mobilised

across various mechanisms, drawing on the most recent data available. This covers biodiversity-relevant taxes, PES, biodiversity offsets, and bilateral biodiversity-related ODA.

Figure 13. **NUMBER OF BIODIVERSITY-RELEVANT ECONOMIC INSTRUMENTS BY COUNTRY AND TYPE (2021)**



Note: Subnational policies are weighted according to the number of regions in that country (e.g. a regional policy for a country with 4 regions is weighted 0.25)
Source: OECD PINE database, accessed 28 July 2021

Table 1. **FINANCE FROM SELECTED BIODIVERSITY-RELEVANT MECHANISMS**

Finance Mechanism	Finance	Coverage	Source
Biodiversity-relevant taxes	USD 7.7 billion per year in tax revenue in OECD countries USD 8.9 billion per year in all countries (2017-2019 average)	> 120 countries reporting	OECD PINE database
Payments for ecosystem services	USD 10.1 billion per year (2017-2019 average)	Across 10 countries that provided data on finance	OECD questionnaire (circulated to > 50 countries)
Biodiversity offsets	USD 6.9 billion per year	Global	Deutz et al. 2020
Biodiversity-relevant ODA	USD 7.8 billion per year (2017-2019 average, commitments, constant 2019 prices)	OECD DAC members	OECD CRS database



Methodology and how to contribute

General

Information for the PINE database is collected via a network of 200 country experts, from in government agencies (Ministries of Finance and Environment, statistical institutes) as well as research institutes and international organisations. Data are collected systematically for the 38 OECD members as well as the active accession countries. A growing number of non-member countries also provide information. Registered experts are asked to update data at

least once a year, typically in January or February, through a password-protected interface. The data collection method may result in some reporting bias, as OECD members and active accession countries are likely to report more data on a regular basis, and all figures should be interpreted in this context.

The OECD Secretariat, in consultation with countries, validates the data before they are published online. The management of PINE is overseen by OECD Committees

and Working Parties such as the Working Party on Environmental Information (WPEI), the Working Party on Biodiversity, Water and Ecosystems (WPBWE) and the Joint Meetings of Tax and Environment Experts (JMTEE). Please contact miguel.cardenasrodriguez@oecd.org if you have any feedback on the database, or if you would like to contribute on a regular basis.

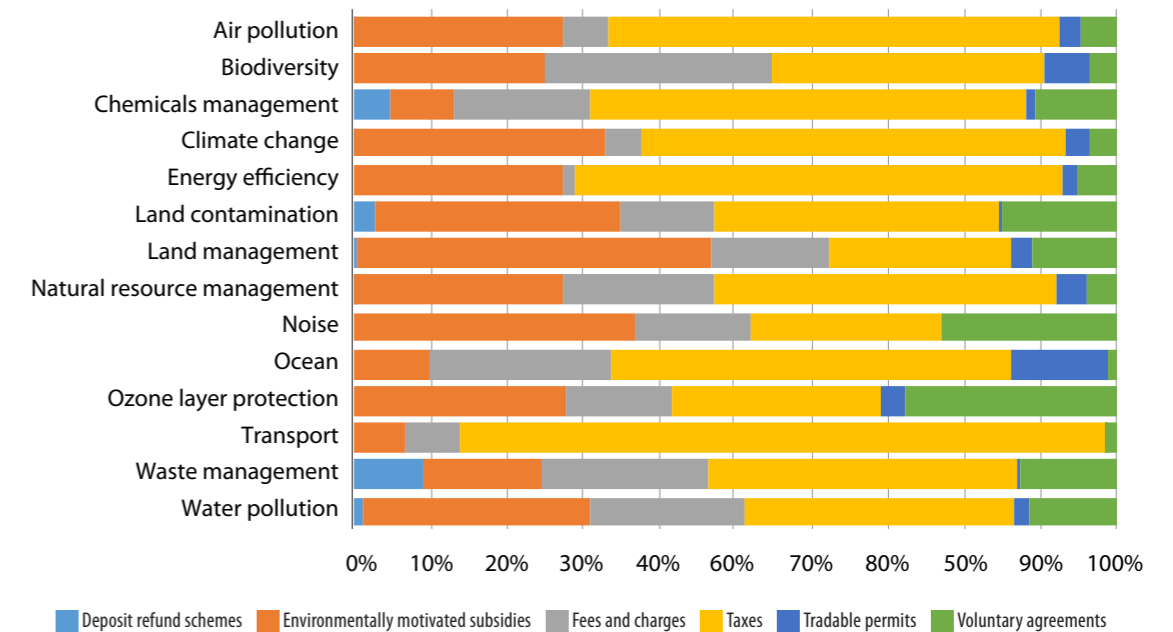
Biodiversity

The PINE database covers six types of policy instruments and categorises them by twelve environmental domains (Figure 14). Instruments can be categorised in multiple domains. An environmental domain for 'biodiversity' was added in 2017, and all existing policy instruments were subsequently tagged as biodiversity-relevant as

appropriate. While the database currently includes policy instruments from more than 120 countries, the biodiversity-relevant policy instruments in the database may not yet be exhaustive. To view the data, go to <https://oe.cd/pine> and select Environmental Domain and then Biodiversity from the menu on the left of the page. Please contact katia.karousakis@oecd.org and edward.perry@oecd.org if you have any feedback on the biodiversity-relevant instruments, or if you would like to contribute on a regular basis.

The information on PES and biodiversity offsets in this brochure was collected via a questionnaire and via literature review.

Figure 14. **POLICY INSTRUMENTS BY TYPE AND ENVIRONMENTAL DOMAIN**



Source: OECD PINE database, accessed 28 July 2021

Further reading

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Deutz et al. (2020), Financing Nature: Closing the Global Biodiversity Financing Gap. https://www.paulsoninstitute.org/wp-content/uploads/2020/09/FINANCING-NATURE-Full-Report-Final-Version_091520.pdf

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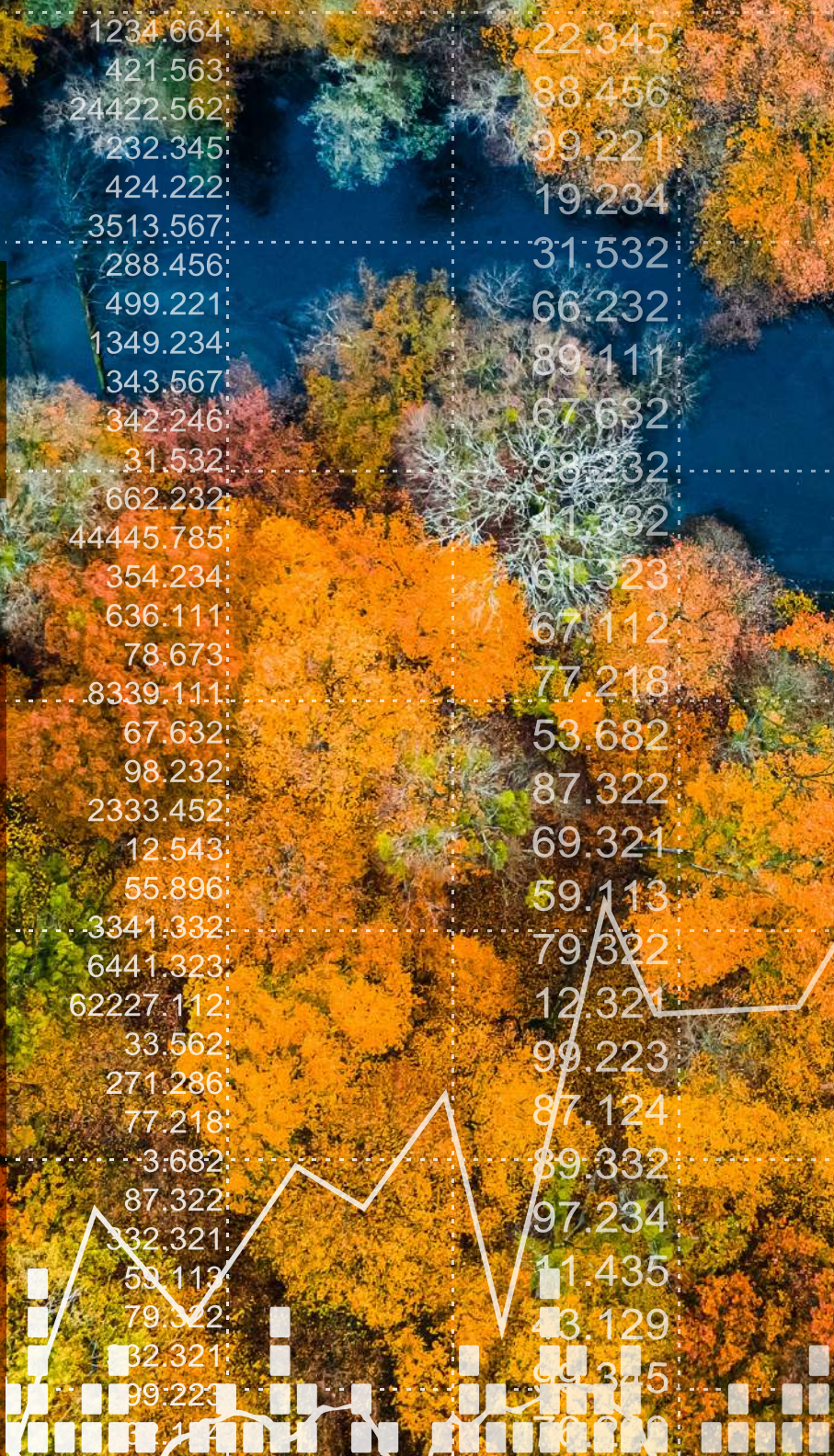
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Van Winkle, C., et al. (2015), "Biodiversity Policy Response Indicators", OECD Environment Working Papers, No. 90, OECD Publishing, Paris. https://www.oecd-ilibrary.org/environment/biodiversity-policy-response-indicators_5jrx8j24fbv-en

Wunder, S. (2015), "Revisiting the concept of payments for ecosystem services", *Ecological Economics* 117, 234-243. <https://www.sciencedirect.com/science/article/abs/pii/S0921800914002961?via%3Dihub>






Territorial note: The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.



For more information:

 www.oecd.org/env/resources/biodiversity/

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